

Mute This Topic (<https://groups.io/g/HP-Agilent-Keysight-equipment/ft/92079549?csrf=5513314409256117711&mute=1&p=Created%2C%2C%2C20%2C2%2C0%2C0>)

Looking for Agilent E4402B repair advice (<https://groups.io/g/HP-Agilent-Keysight-equipment/topic/92079549?p=Created%2C%2C%2C20%2C2%2C0%2C0>)



John Miller

Jun 29 (<https://groups.io/g/HP-Agilent-Keysight-equipment/message/127593>)

Hello everyone,

I am in the process of helping my father repair an E4402B that he was recently given by a fellow radio enthusiast. It boots and passes the digital self tests, and doesn't report anything in the error screen. It does display "LO Unlock", however, which I understand to be a fairly infamous issue on some of these units. Because of this we're not able to have it perform an "Align All" and the scope only displays noise across the entire spectrum.

The unit has firmware A.09.01, 16MB flash, 32MB RAM, the tracking generator, the hi-stability freq. ref., and a few other cards I don't recognize (maybe to do with CATV?) A sticker on the rear of the unit indicates the battery was replaced in 11/2013, and it does retain the date/time correctly. The power on time reports as 175 hours which seems fairly low - perhaps it was reset at some point? The glue between the 1/8" plexi and the flexible plastic in front of the screen has totally broken down and developed these nasty spots, so I have taken the entire front end apart and washed it thoroughly, with good results so far.

Our primary issue is that we don't have other appropriate test equipment for troubleshooting, so I'm working on tracking down an appropriately fast oscilloscope and frequency counter. I have found a couple of other instances of "LO Unlock" being repaired by replacing the U60 divide-by-four with an HMC365S8GE. They're fairly cheap and swapping out an SOIC8 is no big deal, but if it doesn't resolve the issue, I'm not quite sure where to go next.

Something else I noticed while opening up the RF deck is that there is an alarming amount of corrosion. I'm very familiar with leaky caps and batteries, but thankfully this doesn't look anywhere near that bad, but it's still quite messy. I've cleaned as much as I can off the board (almost all of it) and I'm working on blowing/scraping as much as I can from the aluminum shields.

I haven't found the schematics yet, and I haven't found the service manual to be super useful, but it's what I am working out of at the moment. I guess what I'm looking for are any recommendations for repairing it beyond replacing U60.

I've taken a bunch of pictures of what I have found so far here: <https://photos.millerjs.org/?f=Agilent+E4402B> (<https://photos.millerjs.org/?f=Agilent+E4402B>)

Thanks,
John KC1QLN

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Mark Bielman (/g/HP-Agilent-Keysight-equipment/profile/502679)

Jun 30 (<https://groups.io/g/HP-Agilent-Keysight-equipment/message/127608>)

John,

A bit hard to say what might be wrong. (I did fix TWO E440xB's that had this error by changing that divider.) I assume you removed the pins on the new divider per the repair video - I forget which pins but the data sheet says "do not connect" so they need to be removed.

You should also get the CLIP from Artek. The one I have is p/n E4401-90310. Not the best quality but all I could find.

Also these are hard to troubleshoot w/o another spectrum analyzer! You need to verify both (high) frequencies and also their levels. (are the amps working? etc) Those dividers need relatively high power to work properly.

Good luck!

Mark

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John Miller

Jun 30 (<https://groups.io/g/HP-Agilent-Keysight-equipment/message/127609>)

Hi Mark,

Thanks for the words of support! I'm glad to hear of more success with swapping out that divider. I haven't ordered the part yet, but I will keep that in mind. The datasheet for the replacement part I'm planning to get, HMC365S8G (<https://www.analog.com/media/en/technical-documentation/data-sheets/hmc365s8g.pdf>), lists pin 2 and 6 as NC so I'll be sure to remove them.

Another member of this mailing list has mentioned that they have the full CLIP but it might be a while before they can send it to me. Fingers crossed that I don't need to do too much schematic-level troubleshooting, but at the very least I'd like to have them to have a better idea of how this piece of gear works. Ultimately I hope I can track down someone else nearby with a similarly-capable spectrum analyzer to verify all those parameters. One step at a time.

Thanks again,
John

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Mark Bielman (/g/HP-Agilent-Keysight-equipment/profile/502679)

Jun 30 (https://groups.io/g/HP-Agilent-Keysight-equipment/message/127611)

Hi John. Glad to help. I've attached the page that has the section(s) in question. Again, not the greatest copy/scan but gives you an idea.

I misread your post... thought you had already replaced U60. That may indeed be the problem.

Mark

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PRESCALER.pdf

(https://groups.io/g/HP-Agilent-Keysight-equipment/attachment/127611/0/PRESCALER.pdf)

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(https://groups.io/g/HP-Agilent-Keysight-equipment/topic/92029485?p=%2C%2C%2C0%2C0%2C0%3A%3A%2C%2C%2C0%2C0%2C0%2C92029485)

(https://groups.io/g/HP-Agilent-Keysight-equipment/topic/92094193?p=%2C%2C%2C0%2C0%2C0%3A%3A%2C%2C%2C0%2C0%2C0%2C92094193)